NOTE VII.

ON A POSTTERTIARY FAUNA FROM THE STREAM-TIN-DEPOSITS OF BLITONG (BILITON).

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Mr. C. de Groot has lately presented to the Museum a collection of beautifully preserved shells etc., which he has brought together among the stream-tin-deposits of Blitong, in the district of Tandjoeng Pandang, mine N°. 8, Djitjong. Mr. de Groot tells me that these deposits are occasionally regarded as tertiary, and he requested me to give a more exact determination of their age, with the aid of the material collected by himself. I was soon convinced, that the fauna in question belongs to a very recent past, and for this reason it may be more interesting for zoologists than for palaeontologists. In the first place there can be no doubt, that species occuring in posttertiary strata must belong, when representatives of the same species are still living, to the same zoogeographical area of the present time, in which that species is now found. Consequently they may serve to verify the localities from which shells etc. are said to have come, both according to the zoological literature and to the specimens in the musea. A change may however have taken place in the distribution of the animals in these areas with regard to the several islands during the posttertiary epoch as well. Still when similar faunas, as the one here described from Blitong, will gradually become known from a number of other islands, they can yield interesting results with respect to the distribution of animals at a former period. For this reason I resolved to publish the following list in this journal.

I succeeded in identifying sixty specimens of the sixty-eight contained in the collection of Mr. de Groot with still living forms. A single specimen, *Cerithium montis Selae Mart.*, has hitherto only been observed in strata from Mount Sela of Java (accompanied by *Cypraea arabica* Lin., also occuring in Blitong), in strata, to which I have assigned the name of „recente Meeresbildungen" (Comp. Die Tertiärschichten auf Java. Allg. Theil pag. 34). As to the remaining seven specimens, which belong to the genera *Balanus*, *Vermetus*, *Pinna*, *Chama*, *Lucina*, *Tellina*, *Trachyphyllia*, the five first represent forms, of which the exact determination can hardly be successful, when only undertaken by the aid of the literature on the subject, and as I have not been able to compare them with recent representatives of allied forms, it is very possible, that they do belong to recent species. As to *Tellina* and *Trachyphyllia* I hold them to belong to new species [1]). At all events those seven organisms left undetermined are of no consequence in defining the age of the stream-tin-deposits from Blitong as „posttertiary", because moreover not one of all the species in question has been observed in the tertiary strata of the Indian archipelago.

This result is further supported by the extraordinary good state of preservation of most of the remains. There is a great number of shells with traces of colour and some of them are only distinguished from the recent representatives by a somewhat fainter coloration. Other specimens,

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1) I cannot make it out with certainty, because the zoological literature at hand in Leyden is deficient in many respects.

for example *Bulla naucum*, *Cerithium asperum*, *Cer. vertagus*, *Cer. procerum*, which, as it is known, are only little or not at all coloured, could never have been distinguished from recent individuals, if the locality, where they were found, had remained unknown, because even the polish of the shells is sometimes well preserved.

With exception to *Prionastraea tesserifera Ehrbg.*, which has hitherto only been found in the Red sea, all animals mentioned in the following list belong to the fauna of the Indian archipelago according to the statements in the literature on the subject or to the specimens contained in the collections at Leyden and Amsterdam. Moreover the corals of the Indian ocean are very little known, and considering the fact, that a great number of them also occur in the Red sea, *Prionastraea tesserifera Ehrbg.* cannot change our opinion:

That the fauna of the stream-tin-deposits of Blitong agrees 1) with that of the sea surrounding the island of Blitong in the present time, that therefore these deposits must be regarded as a posttertiary formation, which is aequivalent, so far as can be judged by the facts hitherto observed, to strata from Mount Sela of Java.

LIST OF SPECIMENS.

CRUSTACEA.

1. Balanus amaryllis Darw.

MOLLUSCA.

a. *Cephalopoda.*

2. Nautilus pompilius Lin.

b. *Gasteropoda.*

3. Strombus urceus Lin.
4. Strombus isabella Lam.
5. Strombus canarium Lin(?)
6. Pteroceras lambis Lam.
7. Terebellum subulatum Lam.
8. Murex adustus Lam.
9. Murex crassispina Lam.

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1) There is even a great conformity in the varieties, both of the species from the Blitong-sea and the species from the Blitong stream-tin-deposits.

10. Murex haustellum Lin.
11. Pyrula vespertilio Lam.
12. Cassis glauca Lam.
13. Oliva textilina Lam.
14. Conus marmoreus Lin.
15. Voluta scapha Gmel.
16. Cypraea arabica Lin.
17. Natica mamilla Lam.
18. Natica chinensis Lam.
19. Cerithium asperum Brug.
20. Cerithium vertagus Brug.
21. Cerithium procerum Kien.
22. Cerithium montis Selae Mart.
23. Trochus maximus Koch.
24. Trochus maculatus Lin.
25. Trochus acutus Lam.
26. Bulla naucum Lin.

c. *Conchifera.*

27. Ostrea crista galli Chemn.
28. Placuna sella Lam.
29. Pecten senatorius Lam.
30. Pecten radula Lam.
31. Spondylus aculeatus Chemn.
32. Arca antiquata Lin.
33. Arca navicularis Brug.
34. Arca fusca Brug.
35. Cardium rugosum Lam.
36. Cardium papyraceum Chemn.
37. Cardium angulatum Lam.
38. Circe undatina Lam.
39. Cardita phrenetica Lam.
40. Venus Listeri Gray.
41. Venus marica Lin.
42. Cytherea erycina Lam.
43. Cytherea picta Lam.
44. Tapes litterata Lin.
45. Tellina lingua felis Lin.
46. Tellina virgata Lin.
47. Solen brevis Hanl.
48. Solen corneus Lam (?)
49. Selecurtus candidus Quoy et Gaim.
50. Aspergillum annulosum Desh.
51. Septaria arenaria Lam.

ECHINODERMATA.

52. Salmacis sulcata Ag.
53. Laganum depressum Less.
54. Peronella decagonalis Ag.
55. Arachnoides placenta Ag.
56. Brissus carinatus Gray.

CORALLIA.

57. Galaxea fascicularis Oken.
58. Prionastraea tesserifera Ehrbg.
59. Cycloseris cyclolites E. H.
60. Pavonia crassa Dana.
61. Madrepora appressa Dana (?)

Remarks upon certain of the above mentioned remains.

Ad 5. There is one individual with partly restored shell. The restored part, which is separated by a distinct furrow both from the spire and from the old part of the bodywhorl, shows rather strong varices. These varices, which have not been observed in *Str. canarium L.* might be regarded as abnormal, were it not for a similar varix, which, though rather inconspicuous, is nevertheless present on the uninjured part of the bodywhorl. For this reason the determination of *Str. canarium L.* remains somewhat doubtful.

Ad 8. Both the extremes of variation of this species, *macro-* and *micro-phyllus*, are represented in the collection of Blitong, strictly agreeing with similar specimens from the Indian ocean.

Ad 22. When I etablished this species (Die Tertiärschichten auf Java. Palaeontolog. Theil p. 66), I was not able to compare its internal structure with that of *C. telescopium Brug.* The specimen from Blitong, which is open on one side, shows a columella with a strong, flat, bandlike fold, provided with a very distinct longitudinal furrow; in *C. telescopium Brug.* the fold is more sharp-edged than flat and the furrow very inconspicuous. This affords a new proof for the specific distinctness of *C. montis Selae Mart*, even if one might be inclined to regard the specimens designated by this name as identical with such of *C. telescopium Brug*, of which the ridges had been worn out. The good state of preservation of the javanese specimen affords another argument against this view.

The strong prominent fold however, which may be observed internally on the anterior surface (when the animal is placed in its normal position) of the whorls, is no characteristic difference, as it is present in both species. Moreover it is not visible in complete specimens, being absent in the latter half of the bodywhorl.

Ad 26. Amongst the Blitong specimens I also find the variety, which is distinguished by having a smooth band on the middle part of the shell, a variety, which was already mentioned by Lamarck (Hist. nat. des anim. sans vert. VII p. 670) and which is also found in the collections of the Leyden Museum.

Ad 30. Both specimens have only 9—11 ribs; the recent ones generally have 12. This reduced number, constituting a variety, which is often recorded for other species as well, is no objection to their identification with *P. radula Lam.*

Ad 38. All the specimens belong to the variety „*depressa*" (Conf. Roemer. Monographie der Molluskengattung Venus).

Ad 48. The identification remains doubtful, as the right valve, which alone is available, is relatively a little less high than the valves of *Solen corneus Lam.*, which I had occasion to compare.

Ad 50. Only a part of the tube is present and was separated from *A. javanum Lam.* because of the strongly marked annulation.

Ad 59. A series of specimens of this species entirely corresponds with recent specimens from Blitong now in the Leyden Museum. One specimen measures 70 mm. in length, 36 mm. in height and has moreover a very concave undersurface. This is an extreme of variation, towards which the *Fungia glans* figured by Dana (Zooph. p. 290 tab. 18 fig. 2) forms the transition. H. Milne Edwards has already noticed, that *Fungia glans Dana* would eventually prove to be synonymous with *Cycloseris cyclolites E. H.* (Corall. III p. 50).

Ad 60. As far as could be made out from Dana's figure and description, certain recent specimens from the Indian archipelago, contained in the collections of the Leyden Museum, belong to *Pavonia crassa Dana.* With these recent specimens the one from the stream-tin-deposits could be identified with certainty, and so at all events the species of Blitong is one, which still occurs in the Indian ocean.